



CENTRAL PACIFIC HURRICANE CENTER TROPICAL CYCLONE REPORT

TROPICAL CYCLONES 1993

Central Pacific Hurricane Center

JULY 19 - 20, 1993 (TROPICAL DEPRESSION DORA)

Tropical Depression DORA entered the central Pacific in a rapidly weakening condition at about 0000 UTC on July 20. DORA had been an intense hurricane just 48 hours earlier near 17N 133W but the effects of strong vertical wind shear associated with an upper trough near 140W weakened DORA rapidly to tropical storm strength on the 18th and tropical depression status on the 19th as it moved west slowly approaching 140W.

DORA had become a typical sheared tropical cyclone void of deep convection except for the occasional cumulonimbus cloud flaring up within the northeast quadrant. It was now moving steadily westward within the trade flow along 17N at about 10 to 15 knots.

Meanwhile, an upper level cold core low pressure system was present near the Hawaiian Islands also moving westward but very slowly. The proximity to the cold core upper low was unfavorable for maintaining DORA as a tropical system and the last advisory was issued at 210300 UTC for a position near 17N 148W.

As the moisture from the remnant low level circulation of DORA came close to the upper low, the favorable dynamics and instability resulted in an outbreak of thunderstorms over the Hawaiian Islands during the evening hours of the 21st. These showers and thundershowers continued on the 22nd in many areas as beneficial rainfall accumulations helped bring relief to a drought condition that had persisted since the beginning of the year.

1993: Tropical Depression Dora					
Date/Time (UTC)	Latitude (N)	Longitude (W)	Pressure (mb)	Wind Speed (kt)	Stage/Notes
07/20/0000	17.4	140.6	1010	25	Tropical Depression
07/20/0600	17.4	141.8	1010	25	"
07/20/1200	17.4	143.5	1010	25	"
07/20/1800	17.3	144.5	1010	25	"
07/21/0000	17.2	146.0		20	"

JULY 22 - 24, 1993 (TROPICAL STORM EUGENE)

Tropical Storm EUGENE crossed 140W and entered the Central Pacific at 1800Z on July 22 at about the same time that the remnant circulation of DORA was passing south of South Point, Hawaii, 15 degrees longitude farther west. EUGENE followed in the path of DORA, except it was a degree or two farther north close to 19N.

EUGENE had also been an intense Hurricane in the Eastern Pacific a day or two earlier and was in a declining mode as it crossed 140W. The shearing stresses were slightly less severe than was the case with DORA as the upper trough near 140W had weakened. However, the sea surface temperatures were a degree or two lower at 25C underneath the central core of the circulation with the storm being about 100 miles farther north.

Strong high pressure to the north of EUGENE meant deep and strong trades, which carried the weakening circulation west at 20 knots. Tropical Depression EUGENE moved across the southern half of the Big Island at about 1200Z on the 24th. There were no reports of major damage on the Big Island and the other islands to the north. Still, this storm, as did DORA, caused minor power outages, broke tree limbs, and made driving conditions hazardous. One Big Island fisherman, aged 45, was reported missing off Hilo and may have drowned in the rough seas. The Coast Guard so far has recovered only pieces and debris from his 24 foot boat.

Additional much appreciated rainfall fell on all islands with the dissipating depression. The last Advisory was issued at 250300Z for a position near 19.5N 160W.

AUGUST 07 - 19, 1993 (HURRICANE KEONI)

Hurricane Keoni developed from a disturbed area which moved west along 12.5N at 140W at 071800Z. The disturbance was named Tropical Depression ONE-C near 12N144W at 090000Z and was named Tropical Storm KEONI near 12N 150W at 12/1800Z. KEONI started moving in a west northwest direction toward Johnston Island.

KEONI passed about 150 miles south of Johnston Atoll at 16/0600Z with winds estimated at 115 knots, which also was the peak intensity. About 1000 of the 1100 people on Johnston had been

evacuated to Honolulu 24 hours before the storm moved by the atoll. Heavy surf did pound the southeast shores. However, since KEONI was a very compact and intense cyclone, none of the damaging winds or heavy rains reached the island. Highest gusts reported were 45 miles per hour.

After passing Johnston Atoll, KEONI weakened slightly and slowed its forward speed. At 191800Z, KEONI crossed the International Dateline near 20N and became a typhoon. It regained some strength and passed well north of Wake Island a couple of days later, heading in a west northwest direction along the northern fringes of the much larger typhoon VERNON. The system finally weakened into a tropical depression at 280600Z and the 79th and final advisory was issued at 281500Z. The remnant circulation was still present well north of Wake Island in early September for one of the longest lived Hawaiian named tropical cyclones.

1993: Hurricane Keoni					
Date/Time (UTC)	Latitude (N)	Longitude (W)	Pressure (mb)	Wind Speed (kt)	Stage/Notes
08/09/0000	12.5	144.0		30	Tropical Depression
08/09/0600	12.5	144.3		30	"
08/09/1200	12.5	144.4		30	"
08/09/1800	12.4	144.5		30	"
08/10/0000	12.4	144.5		30	"
08/10/0600	12.4	144.7		30	"
08/10/1200	12.4	145.0		30	"
08/10/1800	12.4	145.0		30	"
08/11/0000	12.4	145.0		30	"
08/11/0600	12.4	145.0		30	"
08/11/1200	12.4	145.0		30	"
08/11/1800	12.3	145.5		30	"
08/12/0000	12.2	146.7		30	"
08/12/0600	12.1	148.0		30	"
08/12/1200	11.9	149.6		30	"

08/12/1800	11.8	151.0		50	Tropical Storm
08/13/0000	11.8	152.3		55	"
08/13/0600	11.9	153.6		55	"
08/13/1200	12.0	154.6		55	"
08/13/1800	12.1	155.6		60	"
08/14/0000	12.3	157.0		60	"
08/14/0600	12.7	158.4		60	"
08/14/1200	13.0	159.7		60	"
08/14/1800	13.3	161.0		70	Hurricane Cat. 1
08/15/0000	13.6	162.5		75	"
08/15/0600	13.8	164.0		80	"
08/15/1200	13.9	165.3		90	Hurricane Cat. 2
08/15/1800	14.0	166.7		90	"
08/16/0000	14.1	168.1		95	"
08/16/0600	14.4	169.5		105	Hurricane Cat. 3
08/16/1200	14.8	170.8		115	Hurricane Cat. 4
08/16/1800	15.1	171.5		115	"
08/17/0000	15.5	172.2		115	"
08/17/0600	16.0	172.9		115	"
08/17/1200	16.5	173.6		100	Hurricane Cat. 3
08/17/1800	17.0	174.2		95	Hurricane Cat. 2
08/18/0000	17.3	174.6		90	"
08/18/0600	17.6	175.1		85	"
08/18/1200	18.0	175.7		80	Hurricane Cat. 1

08/18/1800	18.7	176.3		75	"
08/19/0000	19.3	177.1		70	"
08/19/0600	19.8	178.0		70	"
08/19/1200	20.0	178.9		65	"
08/19/1800	20.1	180.0		65	"

AUGUST 14 - 19, 1993 (HURRICANE FERNANDA)

Hurricane FERNANDA originally formed in the eastern Pacific Ocean near latitude 12N and longitude 95W on August 8, 1993. FERNANDA became a hurricane on August 10, 1993 and reached its maximum intensity with sustained winds of 125 knots on August 12. FERNANDA was still a well developed hurricane with maximum sustained winds at 85 knots when she entered the Central Pacific on August 14 at 0600 UTC. FERNANDA crossed 140W at 18.5N moving west along the 25C isotherm, which is considered marginally cool for sustaining a hurricane. FERNANDA did weaken a bit to 75 knots during the next few hours, but then regained strength on approaching the Hawaiian Islands with winds as high as 90 knots. FERNANDA now had developed a very large eye, estimated at about 50 miles in diameter.

At its closest approach to the Hawaiian Islands, FERNANDA was about 300 miles northeast of the Big Island of Hawaii early on the 16th with winds at near 90 knots. A hurricane warning was in effect overnight on August 15th and 16th for the Big Island and a hurricane watch was posted elsewhere. Heavy surf between 10 and 15 feet pounded the east facing beaches from the Big Island to Kauai with some heights between 15 and 20 feet reported on Kauai.

Shoreline roads sustained some damage on all islands and some homes had water enter into them. One home on Molokai was moved several feet off its foundation by the heavy wave action. A number of beach parks were inundated, but campers had previously been evacuated from these areas.

As FERNANDA was approaching the Islands, it started to feel the effects of a trough in the upper westerlies, approaching from the northwest. FERNANDA slowed its forward motion to a crawl and curved northwest and later north. Meanwhile, shearing weakened its winds to tropical storm intensity early on the 17th while northeast of the islands near 23N 151W.

FERNANDA continued to weaken as it drifted north across 30N and was declared extratropical early on the 19th. Ships along its path still reported gale force winds as the remnant circulation moved north across the shipping lanes merging into a frontal zone near 45N 140W on the 21st.

Moisture from FERNANDA, interacting with the cold upper trough, produced some heavy convective showers on Kauai during the afternoon hours on the 19th and produced some localized minor flooding. Showers and thunderstorms also affected the other islands.

1993: Hurricane Fernanda

Date/Time (UTC)	Latitude (N)	Longitude (W)	Pressure (mb)	Wind Speed (kt)	Stage/Notes
08/14/0600	18.6	140.0	973	85	Hurricane Cat. 2
08/14/1200	18.7	141.3	976	80	Hurricane Cat. 1
08/14/1800	18.8	142.8	974	75	"
08/15/0000	18.9	144.1	979	75	"
08/15/0600	19.2	145.3	979	75	"
08/15/1200	19.5	146.5	979	75	"
08/15/1800	19.9	147.8	975	90	Hurricane Cat. 2
08/16/0000	20.3	148.9	976	90	"
08/16/0600	20.7	149.6	975	90	"
08/16/1200	21.1	150.1	977	90	"
08/16/1800	21.5	150.5	977	90	"
08/17/0000	21.8	150.7	980	80	Hurricane Cat. 1
08/17/0600	22.2	151.0	981	75	"
08/17/1200	22.9	151.3	985	65	"
08/17/1800	23.6	151.6	989	55	Tropical Storm
08/18/0000	24.3	151.7	993	50	"
08/18/0600	25.0	151.9	996	50	"
08/18/1200	25.7	152.1	998	50	"
08/18/1800	26.4	152.1	1000	45	"
08/19/0000	27.7	152.2	1002	40	"
08/19/0600	29.0	152.7	1003	40	"
08/19/1200	29.7	154.0	1003	40	"

AUGUST 27 - 28, 1993 (TROPICAL DEPRESSION GREG)

Tropical depression GREG was already at the latitude of the Hawaiian Islands as it crossed into the central Pacific at 280000Z. GREG was almost 2 weeks old, not counting its life as tropical storm BRET in the Atlantic, where it had caused severe flooding with much loss of life in Venezuela and Central America.

Approaching Hawaii and moving over the marginally cool waters of 24.5C near 140W, GREG continued its rapid decline from an intense hurricane a week earlier near 120W to a dissipating tropical depression about 700 miles east of the Islands on the 28th. The remnant shallow circulation remained nearly stationary east of Hawaii for several days into early September.

1993: Tropical Depression Greg					
Date/Time (UTC)	Latitude (N)	Longitude (W)	Pressure (mb)	Wind Speed (kt)	Stage/Notes
08/28/0600	21.1	140.4	1009	30	Tropical Depression
08/28/1200	21.1	141.2	1010	30	"
08/28/1800	21.3	141.0	1011	25	"